GEW174-14
703.7.7, Table 703.7.7

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Revise as follows:

~~**703.7.7 Discharge.** The discharge water from cooling towers used for air-conditioning systems shall be in compliance with Table 703.7.7. Where the discharge water is not captured for reuse, it shall be discharged and treated in accordance with jurisdictional requirements, if applicable.~~

~~**Exception:** Discharge water with total dissolved solids in excess of 1,500 ppm (1,500 mg/L), or silica in excess of 120 ppm (120 mg/L) measured as silicon dioxide shall not be required to meet the minimum parameters specified in Table 703.7.7.~~

703.7.7 Discharge water. The parameters of the discharge water from cooling towers used for air conditioning systems shall not exceed the values indicated in Table 703.7.7. The maximum cycles of concentration for a cooling tower shall be where any one of the following conditions occur:

1. Any value indicated in Table 703.7.7 is achieved.
2. Ten cycles of concentration have occurred.
3. The operation of the condenser water system is affected.

Cooling tower discharge water that is not captured for reuse shall be discharged and treated in accordance with the requirements of the jurisdiction, where applicable.

TABLE 703.7.7
~~MINIMUMCYCLES OF CONCENTRATION DISCHARGE WATER~~
MAXIMUM PARAMETER VALUES FOR WATER IN COOLINGTOWER CONDENSER LOOP[a]

~~MAKEUP WATER TOTAL HARDNESS (mg/L)~~[a] PARAMETER	~~MINIMUM CYCLES OF CONCENTRATION~~ MAXIMUM VALUE
~~< 200~~ Langelier Stability Index	~~5~~ 2.8
~~≥ 200~~ Ca (as CAO3)	~~3.5~~ 800 ppm
Total (M) Alkality	500 ppm
SiO2	150 ppm
Cl	300 ppm
Sulfates	250 ppm
Conductivity	4000µS/ml

a. ~~Total hardness concentration expressed as calcium carbonate~~. Values based upon a galvanized steel cooling tower operating at a maximum temperature of 110°F (43.3°C).

Reason: The requirements in the current code are a function of the hardness expressed as calcium carbonate in the makeup water itself, which varies by location, source and time of the year. Please note that a complete water analysis would allow more precision in the selection of the appropriate cycles of concentration.

A suggested analysis based on the new Table 703.7.7 with maximum water chemistry limits is recommended for the next version of the code. These new suggested guidelines in the suggested Table 703.7.7 begin with a LSI (Langelier Stability Index) requirement. The maximum LSI of 2.8 is called out to avoid potential deposition problems, but there is also a limit on the system temperature and cooling tower materials of construction at 110°F and galvanized steel respectively.

A general requirement for cycles as proposed in the current Table 703.7.7 without specifying a particular make-up water quality could lead to unforeseen water quality issues. The limits in Table 703.7.7, will cover many installations, but not all. There are other minerals and combinations of minerals that will prevent a particular make-up water from being cycled as high as the current version requires.

Cost Impact: Will not increase the cost of construction.

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